IN THE SPECIFICATION:

Claim 1. An impeller for a regenerative turbine pump, said impeller comprising:

(a) a hub defining an aperture at a center thereof into which a shaft of said turbine pump is securable to allow said hub to rotate about a center axis therewith, said hub having an outer cylindrical surface;

(b) an outer ring concentric to said hub, said outer ring having an inner cylindrical surface; and

(c) a plurality of vanes extending between said outer cylindrical surface of said hub and said inner cylindrical surface of said outer ring with each said vane comprising an entrance portion that extends from said outer cylindrical surface of said hub and an exit portion that extends from a radially outward terminus of said entrance portion to said inner cylindrical surface of said outer ring, each of said vanes (i) having a V-shape of a prespecified angle centered relative to a plane normal to said center axis and (ii) having said entrance portion and said exit portion aligned in a non-linear disposition with respect to one another along a dimension of each of said vanes extending between said outer cylindrical surface of said hub and said inner cylindrical surface of said outer ring along at least one of an upstream face and downstream face of said vane from said entrance portion thereof through said exit portion thereof, said entrance and said exit portions of each said vane each having a pair of outer sidewalls, each of said outer sidewalls of each said entrance portion being chamfered along a trailing corner thereof at a predetermined angle relative to said plane.

Claim 2. The impeller claimed in claim 1 wherein each of said outer sidewalls of each said exit portion are chamfered along a trailing corner thereof at said predetermined angle relative to said plane.

Claim 3. The impeller claimed in claim 1 wherein said predetermined angle relative to said plane is substantially equal to an angle at which a fuel stream within said turbine pump approaches said outer sidewalls of said entrance portions.

Claim 4. The impeller claimed in claim 1 wherein said predetermined angle lies within a range of 15° to 45° relative to said plane.

Claim 5. The impeller claimed in claim 4 wherein said predetermined angle is 30° relative to said plane.

Claim 6. The impeller claimed in claim 1 wherein said prespecified angle lies within a range of 50° and 130° for said upstream face of said vane.

Claim 7. The impeller claimed in claim 6 wherein said prespecified angle is 90° for said upstream face of said vane.

Claim 8. The impeller claimed in claim 1 wherein said prespecified angle lies within a range of 80° and 86° for said downstream face of said vane.

Claim 9. The impeller claimed in claim 8 wherein said prespecified angle is 82. 3° for said downstream face of said vane.

Claim 10. The impeller claimed in claim 1 wherein said aperture defined in said hub is notched to permit said impeller to be securely fitted onto said shaft of like shape.

Claim 11. An impeller for a regenerative turbine pump, said impeller comprising:

(a) a hub defining an aperture at a center thereof into which a shaft of said turbine pump is securable to allow said hub to rotate about a center axis therewith, said hub having an outer cylindrical surface;

(b) an outer ring concentric to said hub, said outer ring having an inner cylindrical surface; and

(c) a plurality of vanes extending between said outer cylindrical surface of said hub and said inner cylindrical surface of said outer ring with each said vane comprising an entrance portion that extends linearly outward from said outer cylindrical surface of said hub and an exit portion that extends linearly from a radially outward terminus of said entrance portion to said inner cylindrical surface of said outer ring, each of said vanes having a V- shape of a prespecified angle centered relative to a plane normal to said center axis with said exit portion of each of said vanes being inclined forward of said entrance portion of each of said vanes so as to advance toward said inner cylindrical surface of said outer ring at an exit angle with respect to a direction of rotation of said impeller, said entrance and said exit portions each having a pair of outer sidewalls, each of said outer sidewalls of each said entrance portion being chamfered along a trailing corner thereof at a predetermined angle relative to said plane.

Claim 12. The impeller claimed in claim 11 wherein each of said outer sidewalls of each said exit portion are chamfered along a trailing corner thereof at said predetermined angle relative to said plane.

Claim 13. The impeller claimed in claim 11 wherein said predetermined angle relative to said plane is substantially equal to an angle at which a fuel stream within said turbine pump approaches said outer sidewalls of said entrance portions.

Claim 14. The impeller claimed in claim 11 wherein said predetermined angle lies within a range of 15° to 45° relative to said plane.

Claim 15. The impeller claimed in claim 14 wherein said predetermined angle is 30° relative to said plane.

Claim 16. The impeller claimed in claim 11 wherein said prespecified angle lies within a range of 50° and 130° for said upstream face of said vane.

Claim 17. The impeller claimed in claim 16 wherein said prespecified angle is 90° for said upstream face of said vane.

Claim 18. The impeller claimed in claim 11 wherein said prespecified angle lies within a range of 80° and 86° for said downstream face of said vane.

Claim 19. The impeller claimed in claim 18 wherein said prespecified angle is 82.3° for said downstream face of said vane.

Claim 20. The impeller claimed in claim 11 wherein said exit angle lies within a range of 15° to 50°.

Claim 21. An impeller for a regenerative turbine pump, said impeller comprising:

(a) a hub defining an aperture at a center thereof into which a shaft of said turbine pump is securable to allow said hub to rotate about a center axis therewith, said hub having an outer cylindrical surface;

(b) an outer ring concentric to said hub, said outer ring having an inner cylindrical surface; and

(c) a plurality of vanes extending between said outer cylindrical surface of said hub and said inner cylindrical surface of said outer ring with each said vane comprising an entrance portion that extends from said outer cylindrical surface of said hub and an exit portion that extends from a radially outward terminus of said entrance portion to said inner cylindrical surface of said outer ring, each of said vanes having a V-shape of a prespecified angle centered relative to a plane normal to said center axis and being curved with said entrance portion drawing away from said outer cylindrical surface of said hub at an entrance angle with respect to a direction of rotation of said impeller and said exit portion advancing toward said inner cylindrical surface of said outer ring at an exit angle with respect to said direction of rotation, said entrance and said exit portions each having a pair of outer sidewalls, each of said outer sidewalls of each said entrance portion being chamfered along a trailing corner thereof at a predetermined angle relative to said plane.

Claim 22. The impeller claimed in claim 21 wherein each of said outer sidewalls of each said exit portion are chamfered along a trailing corner thereof at said predetermined angle relative to said plane.

Claim 23. The impeller claimed in claim 21 wherein said predetermined angle relative to said plane is substantially equal to an angle at which a fuel stream within said turbine pump approaches said outer sidewalls of said entrance portions.

Claim 24. The impeller claimed in claim 21 wherein said predetermined angle lies within a range of 15° to 45° relative to said plane.

Claim 25. The impeller claimed in claim 24 wherein said predetermined angle is 30° relative to said plane.

Claim 26. The impeller claimed in claim 21 wherein said prespecified angle lies within a range of 50° and 130° for said upstream face of said vane.

Claim 27. The impeller claimed in claim 26 wherein said prespecified angle is 90° for said upstream face of said vane.

Claim 28. The impeller claimed in claim 21 wherein said prespecified angle lies within a range of 80° and 86° for said downstream face of said vane.

Claim 29. The impeller claimed in claim 28 wherein said prespecified angle is 82.3° for said downstream face of said vane.

Claim 30. The impeller claimed in claim 21 wherein said entrance angle lies within a range of 5° to 30° and said exit angle lies within a range of 15° to 50°.

Claim 31. The impeller claimed in claim 21 wherein a tangent drawn at a center portion of said vane is normal to said direction of rotation.

Claim 32. An impeller for a regenerative turbine pump, said impeller comprising:

a hub having an aperture at about the center thereof, said hub being rotatable about a center axis passing through said aperture, said hub having an outer cylindrical surface;

a ring having an inner cylindrical surface, said inner cylindrical surface facing said outer cylindrical surface of said hub; and

a plurality of vanes extending between said outer cylindrical surface of said hub and said inner cylindrical surface of said ring, each of said vanes having (i) a V-shape of a first angle relative to a first plane normal to said center axis and (ii) an entrance portion that extends from said outer cylindrical surface of said hub and an exit portion that extends from said entrance portion to said inner cylindrical surface of said ring, at least one of said entrance portion and said exit portion being disposed at a second angle relative to a second plane passing through said center axis and normal to a direction of rotation of said impeller.

Claim 33. The impeller of claim 32 wherein said entrance portion is curved.

Claim 34. The impeller of claim 32 wherein said exit portion is curved.

Claim 35. The impeller of claim 33 wherein said exit portion is curved.

Claim 36. The impeller of claim 32 wherein said hub further includes a notch at said aperture.

Claim 37. The impeller of claim 32 wherein said at least one of said entrance portion and said exit portion being disposed at said second angle comprises said entrance portion and said second angle lies within a range of about 5° to about 30°.

Claim 38. The impeller of claim 32 wherein said at least one of said entrance portion and said exit portion being disposed at said second angle comprises said exit portion and said second angle lies within a range of about 15° to about 50°.

Claim 39. The impeller of claim 32 wherein said first angle lies within a range of about 50° to about 130° for an upstream face of said vane.

Claim 40. The impeller of claim 39 wherein said first angle is about 90° for said upstream face of said vane.

Claim 41. The impeller of claim 32 wherein said first angle lies within a range of about 80° to about 86° for a downstream face of said vane.

Claim 42. The impeller of claim 41 wherein said first angle is about 82.3° for said downstream face of said vane.

Claim 43. An impeller for a regenerative turbine pump, said impeller comprising:

a hub having an aperture at about the center thereof, said hub being rotatable about a center axis passing through said aperture, said hub having an outer cylindrical surface; and

a plurality of vanes extending from said outer cylindrical surface of said hub, each of said vanes having (i) a V-shape of a first angle relative to a first plane normal to said center axis and (ii) an entrance portion that extends from said outer cylindrical surface of said hub and an exit portion that extends outwardly from said entrance portion to a distal end of said vane, each of said entrance portion and said exit portion being chamfered along a trailing segment thereof, at least one of said entrance portion and said exit portion are disposed at a second angle relative to a second plane passing through said center axis and normal to a direction of rotation of said impeller.

Cancel Claim 44.

Claim 45. The impeller of claim 43 wherein each of said entrance portion and said exit portion are chamfered along said trailing segment thereof at an angle which lies within a range of about 15° to about 45° relative to said plane.

Cancel Claims 46 – 48.

Claim 49. The impeller of claim 43 wherein said hub further includes a notch at said aperture.

Claim 50. The impeller of claim 43 wherein said at least one of said entrance portion and said exit portion being disposed at said second angle comprises said entrance portion and said second angle lies within a range of about 5° to about 30°.

Claim 51. The impeller of claim 43 wherein said at least one of said entrance portion and said exit portion being disposed at said second angle comprises said exit portion and said second angle lies within a range of about 15° to about 50°.

Claim 52. The impeller of claim 43 wherein said first angle lies within a range of about 50° to about 130° for an upstream face of said vane.

Claim 53. The impeller of claim 52 wherein said first angle is about 90° for said upstream face of said vane.

Claim 54. The impeller of claim 43 wherein said first angle lies within a range of about 80° to about 86° for a downstream face of said vane.

Claim 55. The impeller of claim 54 wherein said first angle is about 82.3° for said downstream face of said vane.

Claim 56. An impeller for a regenerative turbine pump, said impeller comprising:

a hub having an aperture at about the center thereof, said hub being rotatable about a center axis passing through said aperture, said hub having an outer cylindrical surface; and

a plurality of vanes extending from said outer cylindrical surface of said hub, each of said vanes having (i) a V-shape of a first angle relative to a first plane normal to said center axis and (ii) an entrance portion that extends from said outer cylindrical surface of said hub and an exit portion that extends outwardly from said entrance portion to a distal end of said vane, each of said entrance portion and said exit portion being chamfered along a trailing segment thereof, wherein at least one of said entrance portion and said exit portion is curved.